

# Science Program Briefing: Understanding about *Runit Dome*

## Kwalok Melele ko Ikijeen Science Program eo: Melele ko Kin Runit Dome

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# (RUNIT DOME)

Jimen (cement) eo ion dome

CONCRETE CAP

Roñ

DONUT HOLE

Jimen (cement)

SOIL-CEMENT

Kobej killep ko

OVERSIZE  
DEBRIS

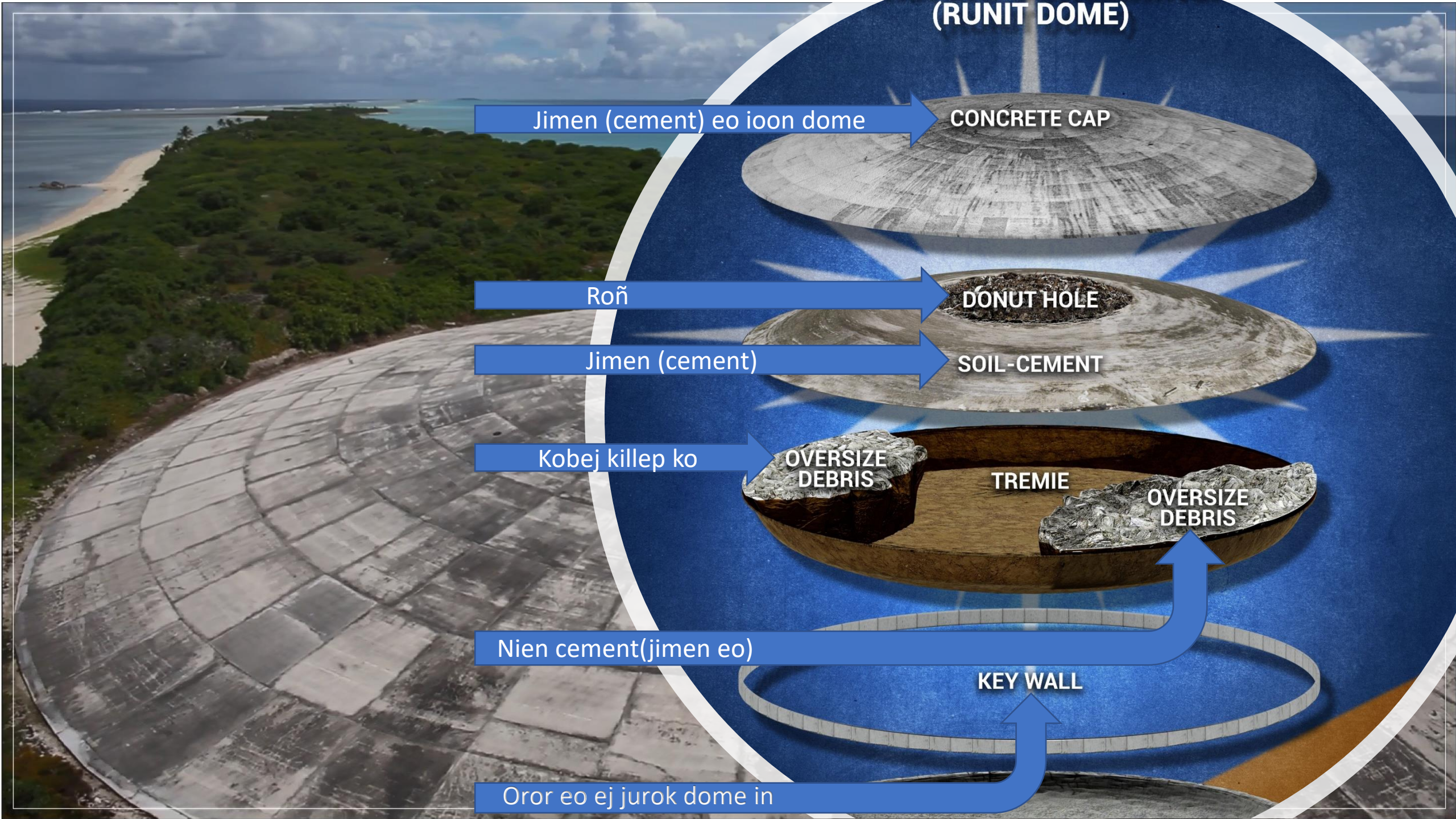
TREMIE

OVERSIZE  
DEBRIS

Nien cement(jimen eo)

KEY WALL

Oror eo ej jurok dome in





# Executive Summary : **Understanding about Runit Dome**

## Ilo Tu kadu in: **Melele ko kin Runit Dome**

(abbreviated and simplified to aid understanding) (Kōkkadudu im kapidodoklok ñan jibañ kōmeleiki)



1. In 1980, the United States Government performed a cleanup of Enewetak to make it safer for people to return home.

Ilo 1980 eo, kien eo an America ear kōmmāne juōn iien karreo ilo Enewetak bwe en emman ñan an armej rool.

2. The cleanup scraped away soil and debris that contained high radiation from the bomb tests.

Karreo eo ear kurattelok būdrej ko im elap radiation ie jen kar kōkōmālmel in bomb ko.

3. The soil and debris were mixed with concrete and placed inside a bomb crater (*Cactus Crater*) on Runit Island.

Būdrej im kobej kein rar kobaik ibben jimen(cement) im likit ilowan juōn roñ in bomb (*Cactus Crater*) ilo Runit, juōn āne edik ilo Enewetak.

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4. The concrete structure is often called *Runit Dome*, or the *Tomb* by local Marshallese people.

**Etan jikin kakkwōn in ej *Runit Dome*, ak Tomb en, ekkar ñan armej in Majōl.**

5. Over the years, RMI national and local government officials have become increasingly concerned that the radiation contained inside *Runit Dome* could seep out into the lagoon because of cracks in the concrete and the possible damage that could be caused by sea level rise.

**Ilo iiō ko maantak, rijerbal ro jen kien eo iolap im Enewetak ear emakijkij aer abnōnō kin radiation eo ilowan tomb eo ñe enaaj toorlok ñan iar jen kōk ko ilo jimen eo bareinwōt jen jorāān ko jet renaj walok jen wanloñlok in dren eo ilojet.**

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6. In partnership with the Enewetak leadership and GRMI officials, the United States sponsored a new law to test if any radiation from the dome might affect marine life or make people sick, either now or into the future.

Ilo kobalok wōt ibben ri-kwelok ro an Enewetakw im rijerbal jen kien eo iolap ilo bōrokuk, kien eo an America ear lolorjake juōn kakien eo ekāāl ñan etale ewōr ke radiation jen dome eo enaj jelet menin mour ko lojet ak kōmman an armej nañinmej, emaroñ kiō ak tokālik.

7. This new law gave DOE authority to check the condition of the concrete structure and to make a study to see how much radiation is escaping from the dome into the lagoon.

Kakien in ekāāl ej lelok kōmaroñ DOE ñan etale kōjeien dome eo im kōmmene juōn ekkatak eo etiljōk ñan lale joñan an radiation driwōjlok jen dome eo ñan lojet.

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8. The location of Runit Dome near the ocean reef makes it more likely that some radiation might seep into the lagoon or onto the ocean reef through the flow of groundwater from beneath the dome. Storms and sea level rise may also affect the flow of groundwater away from the site.

Ijo Runit Dome ej pād ie turin bedbed eo tulik ekōmman bwe jet radiation jen bomb ko rar komeleli en maroñ toor lok ñan lojet tuar ak bedbed eo tulik jen an emakit dren eo tulal jen iumin dome eo. Lañ ko im ibwij lok in lojet remaron bar ukot an dren eo tulal diwōj lok jen ijen.

9. In general, groundwater collected inside the dome contains much more radiation from the bomb compared with lagoon water. It also appears that the height of groundwater under the dome moves with the tide, so the groundwater is connected to the ocean in some way.

Ekkar ñan ad melele, dren in lal eo lowan dome eo elaplok radiation in bomb ko ie ñe jenaj keidi ibben drenin lomalo eo. Ej bareinwōt walok ke utiejin dren eo lowan dome eo ej emakitkit ilo an ibwijtok im bāātlok, kin men in deen eo tulal lowan dome eo ej koba ibben dren eo jen lik (lojet) ilo juōn wāwen.





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10. More studies are needed to show how the dome radiation moves around in the groundwater. However, it appears that the radiation that we do find in the lagoon water is coming from bottom sediments of the lagoon and not from the dome.

Ej aikuj bar wor ekkatak ko ñan kwalok wāwen an radiation ilo dome eo emakitkit ilo dren eo tulal. Bōtaab, lamwot bwe-drikdrik in radiation jen bomb ko rar komeleli eo jej loe ilo dren eo tuiar ej itok jen lum ko lal bulōn lojet im jab jen dome.

11. Also, there appears to be less radiation in the lagoon water now compared with the time before ‘the Tomb’ was built.

Bareinwōt, lamwōt emoj an driklok radiation jen bomb ko rar komeleli ilo dren eo lojet loan aelōñ eo kiō jen iien ko mokta jen aer kar kōmmene “Tomb” eo.

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12. Consulting engineers think that the concrete covering the dome is generally in good condition. The cracks that are seen in the concrete do not cause radiation or form sites where radiation is escaping into the lagoon.

Armej ro retijemlok ilo jermal kein rej lemnak jimen (cement) eo ej kalbubuik dome eo ej emman wōt. Kōk ko rej loi ilo jimen eo rejjab kōmman menin an radiation ak kōmman ialan an radiation driwōjlok ñan lojet.

13. Smaller size cracks do not affect the overall strength of the concrete.

Kōk jidrik kein rōban kōmman oktak ñan joñan kajoer eo an jimen eo





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14. People living on Enewetak are understandably concerned about ‘the *Tomb*’. It is a symbol of the time of the bomb and the effects this had on the people of the Marshall Islands.

Jemelele ke armej ro ilo Enewetak rej ekkōl kin Tomb eo. Ej juōn men eo ej kakemejmej kin iien kar bomb ko im oktak ko jen wōt wāween in ear walok ñan armej in aelōñ eo.

15. However, it is important to understand that the routine tests that DOE performs in conjunction with our Marshallese whole body counting technicians on Enewetak clearly show that the amount of radiation people receive in their diet is very low. This includes the radiation that could come from eating fish or other marine foods, not only from offshore areas of Runit Island but from all over Enewetak lagoon.

Bōtaab, elukkun aorōk bwe jen melele test ko ekka an DOE kōmmāni kobalok iben Ri-Majol ro rej jermal ilo whole-body-count eo ilo Enewetak ej kalikar joñan radiation jen bomb ko rar komeleli im armij rej bōk jen mōñā ko kūjeer elukkun drik. Bareinwōt bar kobaik lok radiation eo emaroñ itok jen mōñā ek im mōñā ko jet jen lojet, ejab jen ijoko lojet turin Runit wot ak jen bar malo eo loan aolepen Enewetak.

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16. Under these conditions it is considered safe to live on Enewetak. The amount of radiation seen in people is generally much lower than the RMI national government's own safety limit that was set up to protect people from getting too much radiation and making them sick.

Lumin wāwen kein, jemaroñ ba ejelok uwōta ñan jokwe ilo Enewetak. Joñan radiation eo jej loe ibben armej elukkun driklok jen joñan en emōj an kien en an Majōl karōke ñan kōjbarok armej jen aer bok radiation im komman menin aer naninmej.

17. DOE scientists are planning to install groundwater wells on and around the dome to test the groundwater for different types of radiation and model what might happen if this water seeps out into the lagoon. This will allow us to learn more about radiation and possible long-term effects of *Runit Dome* on the health of the local population.

Scientist ro an DOE rej kiō bōk buñton ko ñan kōllaak aibōj lal ko ilo dome eo im ibelakin ñan kabbok radiation jen bomb ko rar komeleli im reoktak jen dron ilo drenin lal eo im elmakote ta eo emaroñ naj walok ñe dren in enaj toorlok ñan malo in aelōñ eo. Wāwen in enaj komman menin an laplok ad ekkatok kake radiation im ta ko remaroñ walok jen *Runit Dome* ilo juon iien eo aetok im emaroñ komman oktak ñan ejmour eo an armij ro rej jokje aelon eo.

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18. Results from this study will be shown to other scientists around the world to help validate the work. Findings so far indicate that this new study can be conducted in a safe manner without causing damage to the dome.

Aolep jemlok ko jen ekkatak in enaj walok ñan scientist ro jet ibelakin lal in ñan aer kamoole. Ekkar ñan wāwen ko emōj jelā kaki maantak, ej alikkar ñan kōj ke ekatak in ekāāl emaroñ kōmman ilo an ejjelok kauwōtata ñan kakure dome eo.



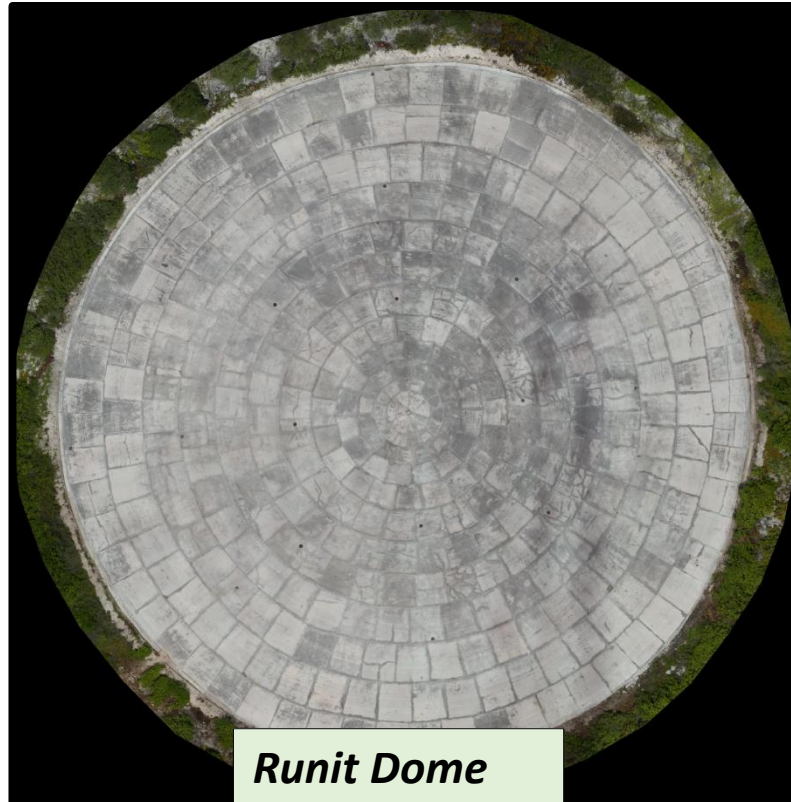


# What have we done so far?

## Ta eo emōj an tobrak ad kōmmane?

- 1) Conducted a photographic survey and started a program to help maintain the dome (to clean up the vegetation and fix cracks in the concrete).

Emōj bōk jet pija ko ñan kwalok melaj ko im jino juōn program ñan jibañ jerbale dome eo (ñan julok mar ko im kōmmane kōk ko ilo jimen eo)



*Runit Dome*



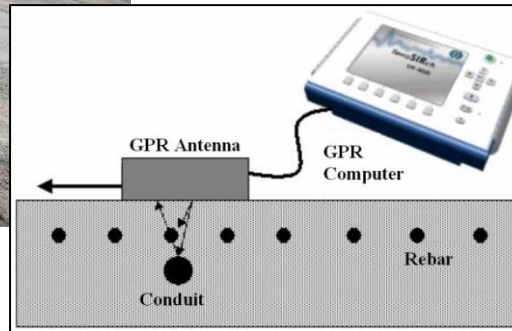
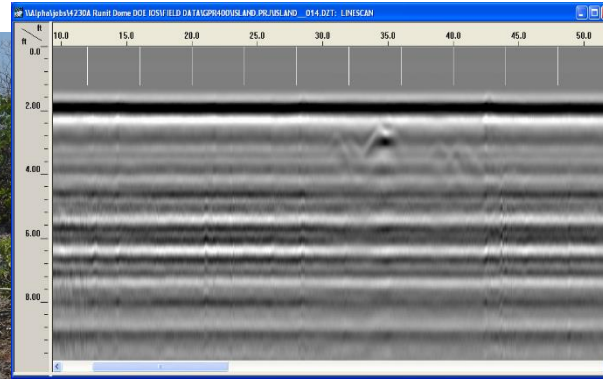
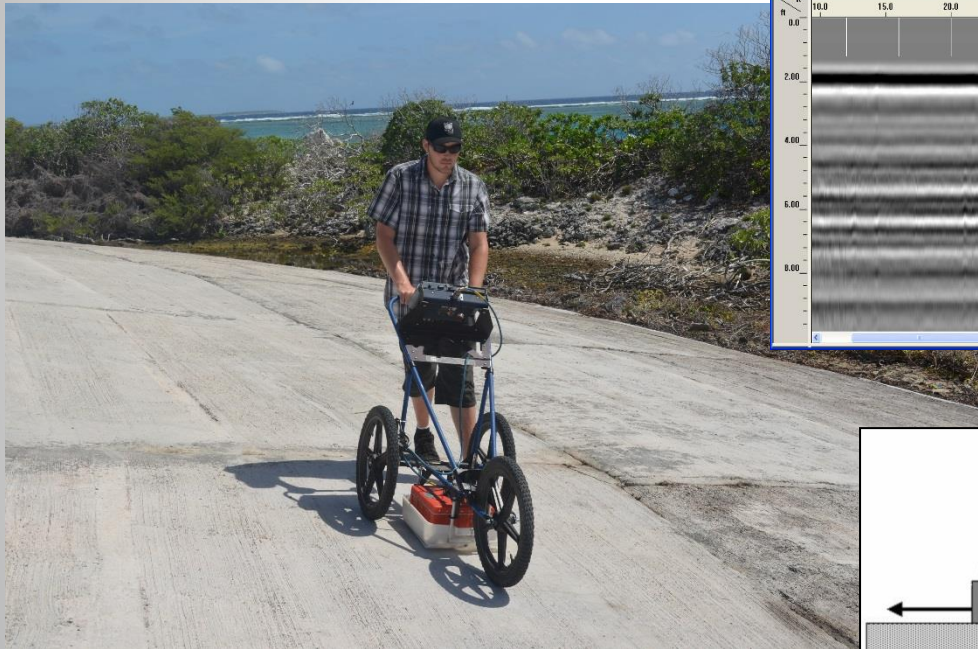


# What have we done so far, *cont'd*

## Ta eo emōj an tōbrak ad kōmmane, *manlok wōt*

2) Performed an initial engineering survey of the structure to test the quality and measure the thickness of the concrete.

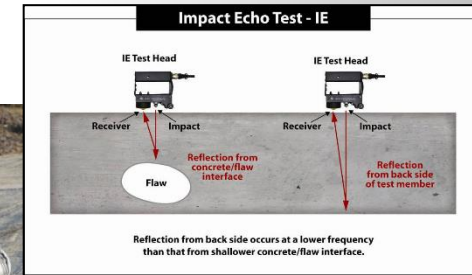
Kōmmane juōn etale ikijen jermal in engineering ñan ānbwinnin dome eo ñan test e kajoorin im joñe joñan an mijel jimen eo.



### Ground Penetrating Radar

[Nondestructive testing of the integrity of the concrete to identify voids (air pockets) and other reflective anomalies down through the waste pile]

[Juōn kain test eo eban kakkure dome eo ñon bukōt bōjo in kōto ko im men ko jet rejab alikar lal lok ñan kobej ko rar ejaak]



### Measurements based on Impact Echo

[Provided a measure of the thickness of the concrete cap]  
[Kwalok joñan an mijel jimen eo mejen dome eo.]



# What have we done so far? *cont'd*

## Ta eo emōj an tōbrak ad kōmmane, *manlok*

- 3) Conduct initial tests to see how much radiation from the bomb that we could find in the groundwater beneath the dome compared with what is in lagoon water

Eloñ test ko emōj kōmadmodi moktalok nan lale ewi joñan radiation jen bomb ko rar komeleli jemaroñ loi ilo dren eo tulal iumin dome eo im lale nan joñan eo ilo dren eo lojet tuiar in aneo.





## What have we done so far? *cont'd*

### Ta eo emōj an tōbrak ad kōmmane, *manlok*

- 4) Tested the strength of the concrete to make sure it is safe to drill boreholes to collect groundwater.

Etale kajoor in jimen eo im lale bwe en emman ad kimlij roñ ñan bōk dren eo ilal.









